

WHAT IS CLAIMED IS:

1                   1.       A composition, comprising: isolated human dendritic cells which have  
2       been exposed, *in vitro*, to an antigen associated with a tumor cell and a factor or agent that  
3       promotes Major Histocompatibility Complex- (MHC-) class I processing of the antigen.

1                   2.       The composition of claim 1 in which subsequent to exposure, the  
2       dendritic cells have been cryopreserved.

1                   3.       The composition according to claim 1, in which the antigen is a lysate  
2       of tumor cells isolated from a patient, a membrane preparation of tumor cells isolated from a  
3       patient, a purified tumor specific antigen, a purified tumor associated antigen, a purified  
4       tissue associated antigen, a purified tissue specific antigen, or an antigenic fragment thereof.

1                   4.       The composition according to claim 3, in which the antigen is a  
2       prostate tumor associated antigen.

1                   5.       The composition according to claim 3, in which the antigen is a lysate  
2       of prostate tumor cells of a prostate cancer patient, a membrane preparation of prostate tumor  
3       cells of a prostate cancer patient, purified prostate specific membrane antigen (PSMA), a  
4       peptide having the amino acid sequence Leu Leu His Glu Thr Asp Ser Ala Val (SEQ ID NO.  
5       1), a peptide having the amino acid sequence Ala Leu Phe Asp Ile Glu Ser Lys Val (SEQ ID  
6       NO. 2), a peptide having the amino acid sequence Xaa Leu (or Met) Xaa Xaa Xaa Xaa Xaa  
7       Xaa Val (or Leu) where Xaa represents any amino acid, purified prostate specific antigen  
8       (PSA), purified prostate acid phosphatase (PAP), six transmembrane epithelial antigen of the  
9       prostate (STEAP), prostate carcinoma tumor antigen (PCTA-1), prostate stem cell antigen  
10       (PSCA), or purified prostate mucus antigen recognized by monoclonal antibody PD41.

1                   6.       The composition according to claim 3, in which the prostate cancer  
2       antigen is:

3                   Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);

4                   Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);

5                   Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);

6                   Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);

7 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);  
 8 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);  
 9 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);  
 10 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);  
 11 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);  
 12 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);  
 13 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);  
 14 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);  
 15 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);  
 16 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);  
 17 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);  
 18 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);  
 19 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);  
 20 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);  
 21 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);  
 22 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);  
 23 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);  
 24 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);  
 25 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);  
 26 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);  
 27 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);  
 28 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);  
 29 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);  
 30 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);  
 31 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);  
 32 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);  
 33 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);  
 34 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);  
 35 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);  
 36 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or  
 37 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).  
 38

1                   7.       The composition according to claim 1 in which the human dendritic  
2 cells were obtained from skin, spleen, bone marrow, thymus, lymph node, chord blood, or  
3 peripheral blood.

1                   8.       The composition according to claim 1, in which the dendritic cells are  
2 extended life span dendritic cells.  
3

1                   9.       The composition of claim 1, wherein the factor or agent comprises  
2 bacillus Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).  
3

1                   10.      A method for producing a tumor cell proliferation inhibiting response,  
2 comprising: administering, to a patient in need thereof, an effective amount of human  
3 dendritic cells, exposed *in vitro* to an antigen and a factor or agent that promotes Major  
4 Histocompatibility Complex- (MHC-) class I processing of the antigen, such that after  
5 administration the human dendritic cells presenting the antigen in the context of MHC-class I  
6 elicit an immune response or augment an existing immune response which inhibits the  
7 proliferation of a tumor cell.

1                   11.      The method of claim 10, wherein the factor or agent is bacillus  
2 Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).

1                   12.      The method according to claim 10, in which the antigen is a lysate of  
2 cancer tumor cells isolated from a patient, a membrane preparation of tumor cells isolated  
3 from a patient, a purified tumor specific antigen, a purified tumor associated antigen, a  
4 purified tissue associated antigen, a purified tissue specific antigen, or an antigenic fragment  
5 thereof.

1                   13.      The method according to claim 12, in which the antigen is a prostate  
2 tumor associated antigen.

1                   14.      The method according to claim 12, in which the prostate tumor  
2 associated antigen is a lysate of prostate tumor cells of a prostate cancer patient, a membrane

3 preparation of prostate tumor cells of a prostate cancer patient, purified prostate specific  
4 membrane antigen (PSMA), a peptide having the amino acid sequence Leu Leu His Glu Thr  
5 Asp Ser Ala Val (SEQ ID NO. 1), a peptide having the amino acid sequence Ala Leu Phe  
6 Asp Ile Glu Ser Lys Val (SEQ ID NO. 2), a peptide having the amino acid sequence Xaa Leu  
7 (or Met) Xaa Xaa Xaa Xaa Xaa Xaa Val (or Leu) where Xaa represents any amino acid,  
8 purified prostate specific antigen (PSA), purified prostate acid phosphatase (PAP), six  
9 transmembrane epithelial antigen of the prostate (STEAP), prostate carcinoma tumor antigen  
10 (PCTA-1), prostate stem cell antigen (PSCA), or purified prostate mucus antigen recognized  
11 by monoclonal antibody PD41.

1 15. The method according to claim 12, in which the prostate cancer  
2 antigen is:

3 Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);  
4 Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);  
5 Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);  
6 Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);  
7 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);  
8 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);  
9 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);  
10 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);  
11 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);  
12 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);  
13 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);  
14 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);  
15 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);  
16 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);  
17 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);  
18 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);  
19 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);  
20 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);  
21 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);  
22 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);

23 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);  
 24 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);  
 25 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);  
 26 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);  
 27 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);  
 28 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);  
 29 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);  
 30 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);  
 31 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);  
 32 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);  
 33 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);  
 34 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);  
 35 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);  
 36 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or  
 37 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).

1 16. The method according to claim 10, in which the human dendritic cells  
 2 were obtained from skin, spleen, thymus, bone marrow, lymph nodes, chord blood, or  
 3 peripheral blood of the patient.

1 17. The method according to claim 10, in which the human dendritic cells  
 2 were obtained from peripheral blood.

3 18. The method according to claim 10, in which the dendritic cells were  
 4 obtained from a healthy individual HLA-matched to the patient.

1 19. The method according to claim 10, in which the dendritic cells are  
 2 extended life span dendritic cells.

1 20. The method according to claim 10, in which the human dendritic cells  
 2 were cryopreserved and then thawed prior to administration to the patient.

1                   21.     The method according to claim 10, in which the patient is suffering  
2 from metastatic prostate cancer.

1                   22.     A method for producing a tumor growth inhibiting response,  
2 comprising: administering, to a patient in need thereof, an effective amount of activated T  
3 cells, in which the T cells were activated *in vitro* by exposure to human dendritic cells  
4 exposed to an antigen and a factor or agent that promotes Major Histocompatibility Complex  
5 (MHC) Class I processing of the antigen.

1                   23.     The method of claim 22, wherein the factor or agent is Bacille  
2 Calmette Guerin (BCG) or BCG with lipopolysaccharide (LPS).

1                   24.     The method according to claim 22, in which the tumor associated  
2 antigen is selected from the group consisting of a lysate of tumor cells of a patient, a  
3 membrane preparation of tumor cells of a patient, a purified tumor specific antigen, a purified  
4 membrane antigen, a purified tissue specific antigen, or an antigenic fragment thereof.

1                   25.     The method according to claim 22, in which the antigen is a prostate  
2 tumor associated antigen.

1                   26.     The method according to claim 22, in which the antigen is a lysate of  
2 prostate tumor cells of a prostate cancer patient, a membrane preparation of prostate tumor  
3 cells of a prostate cancer patient, purified prostate specific membrane antigen (PSMA), a  
4 peptide having the amino acid sequence Leu Leu His Glu Thr Asp Ser Ala Val (SEQ ID NO.  
5 1), a peptide having the amino acid sequence Ala Leu Phe Asp Ile Glu Ser Lys Val (SEQ ID  
6 NO. 2), a peptide having the amino acid sequence Xaa Leu (or Met) Xaa Xaa Xaa Xaa Xaa  
7 Xaa Val (or Leu) where Xaa represents any amino acid, purified prostate specific antigen  
8 (PSA), purified prostate acid phosphatase (PAP), six transmembrane epithelial antigen of the  
9 prostate (STEAP), prostate carcinoma tumor antigen (PCTA-1), prostate stem cell antigen  
10 (PSCA), or purified prostate mucus antigen recognized by monoclonal antibody PD41.

1 27. The method according to claim 22, in which the antigen is:

2 Trp Leu Cys Ala Gly Ala Leu Val Leu (SEQ ID NO: 3);

3 Val Leu Ala Gly Gly Phe Phe Leu Leu (SEQ ID NO: 4);

4 Glu Leu Ala His Tyr Asp Val Leu Leu (SEQ ID NO: 5);

5 Asn Leu Asn Gly Ala Gly Asp Pro Leu (SEQ ID NO: 6);

6 Thr Leu Arg Val Asp Cys Thr Pro Leu (SEQ ID NO: 7);

7 Val Leu Arg Met Met Asn Asp Gln Leu (SEQ ID NO: 8);

8 Pro Met Phe Lys Tyr His Leu Thr Val (SEQ ID NO: 9);

9 Asn Met Lys Ala Phe Leu Asp Glu Leu (SEQ ID NO: 10);

10 Leu Met Tyr Ser Leu Val His Asn Leu (SEQ ID NO: 11);

11 Met Met Asn Asp Gln Leu Met Phe Leu (SEQ ID NO: 12);

12 Glu Gly Asp Leu Val Tyr Val Asn Tyr (SEQ ID NO: 13);

13 Ala Gly Asp Pro Leu Thr Pro Gly Tyr (SEQ ID NO: 14);

14 Arg Val Asp Cys Thr Pro Leu Met Tyr (SEQ ID NO: 15);

15 Leu Phe Glu Pro Pro Pro Gly Tyr (SEQ ID NO: 16);

16 Thr Tyr Glu Leu Val Glu Lys Phe Tyr (SEQ ID NO: 17);

17 Ala Gly Glu Ser Phe Pro Gly Ile Tyr (SEQ ID NO: 18);

18 Trp Gly Glu Val Lys Arg Gln Ile Tyr (SEQ ID NO: 19);

19 Ile Val Arg Ser Phe Gly Thr Leu Lys Lys Glu (SEQ ID NO: 20);

20 Asp Glu Leu Lys Ala Glu Asn Ile Lys Lys Phe (SEQ ID NO: 21);

21 Lys Ser Leu Tyr Glu Ser Trp Thr Lys Lys Ser (SEQ ID NO: 22);

22 Ala Tyr Ile Asn Ala Asp Ser Ser Ile (SEQ ID NO: 23);

23 Lys Tyr Ala Asp Lys Ile Tyr Ser Ile (SEQ ID NO: 24);

24 Gly Tyr Tyr Asp Ala Gln Lys Leu Leu (SEQ ID NO: 25);

25 Thr Tyr Ser Val Ser Phe Asp Ser Leu (SEQ ID NO: 26);

26 Asn Tyr Ala Arg Thr Glu Asp Phe Phe (SEQ ID NO: 27);

27 Leu Tyr Ser Asp Pro Ala Asp Tyr Phe (SEQ ID NO: 28);

28 Leu Pro Ser Ile Pro Val His Pro Ile (SEQ ID NO: 29);

29 Ser Pro Ser Pro Glu Phe Ser Gly Met (SEQ ID NO: 30);

30 Val Leu Val His Pro Gln Trp Val Leu (SEQ ID NO: 31);

31 Lys Leu Gln Cys Val Asp Leu His Val (SEQ ID NO: 32);

32 Ala Leu Pro Glu Arg Pro Ser Leu Tyr (SEQ ID NO: 33);  
33 Ile Val Gly Gly Trp Glu Cys Glu Lys (SEQ ID NO: 34);  
34 Gln Val His Pro Gln Lys Val Thr Lys (SEQ ID NO: 35);  
35 Val Val His Tyr Arg Lys Trp Ile Lys (SEQ ID NO: 36); or  
36 Cys Tyr Ala Ser Gly Trp Gly Ser Ile (SEQ ID NO: 37).

1 28. The method according to claim 22, in which the human dendritic cells  
2 were obtained from skin, spleen, bone marrow, thymus, lymph nodes, chord blood, or  
3 peripheral blood of the prostate cancer patient.

1 29. The method according to claim 22, in which the human dendritic cells  
2 were obtained from peripheral blood.

1 30. The method according to claim 22, in which the human dendritic cells  
2 are extended life span dendritic cells.

1 31. The method according to claim 22, in which the human dendritic cells  
2 were cryopreserved, thawed and recovered prior to their use to activate the T cells *in vitro*.

1 32. The method according to claim 22, in which the T cells were obtained  
2 from the patient.

1 33. The method according to claim 22, in which the T cells were obtained  
2 from a healthy individual HLA-matched to the patient.

1 34. The method according to claim 22, in which the patient is suffering  
2 from metastatic prostate cancer.

1 35. The method according to claim 22, in which the T cells comprise  
2 purified CD8<sup>+</sup> T cells or a mixed population of CD4<sup>+</sup> and CD8<sup>+</sup> T cells.